

REMARKS

Claims 2-13 are all the claims pending in the application.

Applicant thanks the Examiner for acknowledging the claim to foreign priority.

Applicant notes, however, that the Examiner did not acknowledge whether the certified copy of the priority document was received. Accordingly, Applicant respectfully requests that the Examiner indicate that the certified copy of the priority document has been received in the next Office paper by checking box 13(a)(1) on the Office Action Summary.

I. Claim Objections

The Examiner has objected to claim 2 for a minor informality. Applicant hereby corrects this minor informality and respectfully requests that the objection be withdrawn.

II. Claim Rejections under 35 U.S.C. § 102(b)

Claims 2-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sone (US 4,365,604). Applicant respectfully traverses this rejection on the following basis.

Independent claim 4 defines a novel combination of features which forms a humidity sensor. Included among the features of this humidity sensor is a lower electrode, a moisture sensitive layer and an upper electrode successively formed on an insulating substrate. Applicant submits that the claimed combination, including at least this feature, is neither disclosed nor suggested by Sone.

Sone discloses an oxygen sensitive element 30 having a substrate 32, a reference electrode layer 36, a measurement electrode layer 40 and a protective layer 42 (See Fig. 2; col. 7, lines 1-24; and col. 8, lines 1-5). The Examiner asserts that protective layer 42 corresponds to a moisture sensitive layer. Applicant respectfully disagrees.

In Sone, layer 42 is disclosed as a gas permeable protective layer composed of a ceramic material such as alumina or calcium zirconate. Thus, while gas is able to penetrate protective layer 42 via the pores thereof, in no way does protective layer 42 act as a moisture sensitive layer. Indeed, as the device in Sone is disclosed an oxygen sensitive element, not a humidity sensor, it is clear that protective layer 42 is not sensitive to moisture.

However, assuming for the sake of argument alone, that the protective layer 42 in Sone could somehow correspond to the moisture sensitive layer in claim 1, Applicant submits that Sone still would not disclose or suggest all of the features of the claim.

In the Office Action, the Examiner equates the substrate 32 to the insulating substrate as claimed; the reference electrode layer 36 to the lower electrode as claimed; the measurement electrode layer 40 to the upper electrode as claimed; and the protective layer 42 to the moisture sensitive layer as claimed (see Office Action at page 3).

Applicant respectfully submits, however, that the Examiner has ignored certain features of claim 4. For example, while the Examiner asserts that Sone discloses a lower electrode, a moisture sensitive layer and an upper electrode formed on an insulating substrate, the Examiner has not addressed the feature of the lower electrode, the moisture sensitive layer and the upper

electrode being formed successively on the insulating substrate, as is required by claim 4.

Indeed, Sone does not disclose or even suggest such a feature.

Rather, Sone clearly shows in Fig. 2 that protective layer 42 (which the Examiner equates to the moisture sensitive layer) is formed so as to surround electrode 40 (which the Examiner equates to the upper electrode). Therefore, as layer 42 is formed over electrode 40, it is clear that Sone does not disclose a lower electrode, moisture sensitive layer and upper electrode being formed successively on the insulating substrate.

Even if the Examiner considered the subject feature a product-by-process limitation, such feature affects the physical structure of the end product and cannot be ignored for purposes of the rejection of the product claims. In the case of the present invention as recited in claim 4, one skilled in the art would readily understand that a moisture sensor having a lower electrode, a moisture sensitive layer and an upper electrode successively formed on a substrate has unique structural characteristics distinguishing the sensor from one that has a lower electrode, a moisture sensitive layer and upper electrode which are not successively formed on the substrate.

Therefore, as Sone fails to disclose or suggest all of the features of claim 4, Applicant respectfully submits that the claim is patentable over the cited prior art and respectfully requests that the Examiner reconsider and withdraw the rejection. Claims 2, 3, 5 and 6 depend from claim 4 and therefore incorporate all of the features thereof. Accordingly, Applicant submits that these claims are patentable at least by virtue of its dependency.

In addition, claim 3 recites the feature of a lower electrode comprising a porous body. The Examiner asserts that Sone discloses this feature at column 7. Applicant respectfully disagrees.

As discussed above, the Examiner has equated the reference electrode layer 36 to the lower electrode as claimed. Sone, however, fails to disclose that the reference electrode layer 36 comprises a porous body. Rather, Sone discloses that the measurement electrode layer 40 (which the Examiner has equated as the upper electrode as claimed) is microscopically porous and permeable to gas molecules.

Thus, while the measurement electrode layer 40 is disclosed as being porous, Sone does not disclose that the reference electrode layer 36 is porous. Accordingly, as Sone fails to disclose or suggest all of the features of claim 3, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

III. Claim Rejections under 35 U.S.C. § 103(a)

A. Claims 5 and 7 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sone (US 4,365,604) in view of Sakai et al. (US 6,126,312).

Claims 5 and 7 depend from claim 4. Applicant respectfully submits that Sakai fails to cure the deficiencies discussed above regarding claim 4. Accordingly, Applicant submits that claims 5 and 7 are patentable at least by virtue of their dependency.

B. Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sone (US 4,365,604) in view of Yasuda et al. (JP 57-39342).

Independent claim 8 recites the feature of a lower electrode, a moisture sensitive layer and an upper electrode successively formed on the insulating substrate. For the same reasons discussed above regarding claim 4, Applicant respectfully submits that Sone fails to teach or suggest such a feature. In addition, Applicant submits that Yasuda fails to cure the deficiencies of Sone.

Furthermore, claim 8 recites the feature of a humidity sensor which is adapted for measuring humidity in an atmosphere containing a very small amount of oxygen and containing a reducing gas. The Examiner recognizes that Sone does not teach the feature of a humidity sensor as claimed. In an attempt to cure this deficiency, the Examiner applies Yasuda and asserts that Yasuda teaches such a feature. Applicant respectfully disagrees.

Contrary to the assertion of the Examiner, Yasuda does not teach a humidity sensor adapted for measuring humidity. Rather, Yasuda teaches a sensor 4 which is able to detect residual oxygen present in an exhaust pipe so as to set an air/fuel ratio (see Constitution). Nowhere, however, does Yasuda teach that the sensor 4 is adapted for measuring humidity, as is required by claim 8. Further, Sone also fails to teach a sensor adapted for measuring humidity. Similar to Yasuda, Sone merely discloses an oxygen sensitive device.

Based on the foregoing, Applicant submits that the combination of Sone and Yasuda fails to teach or suggest all of the features of claim 8. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

C. Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sone (US 4,365,604) in view of Kampe et al. (US 4,602,426). Applicant respectfully traverses this rejection on the following basis.

Independent claims 9 and 10 recite the feature of a lower electrode, a moisture sensitive layer and an upper electrode successively formed on the insulating substrate. For the same reasons discussed above regarding claim 4, Applicant respectfully submits that Sone fails to teach or suggest such a feature. In addition, Applicant submits that Kampe fails to cure the deficiencies of Sone. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

D. Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Sone (US 4,365,604) in view of Tanino et al. (US 4,656,455).

Claim 11 depends from claim 4. Applicant respectfully submits that Tanino fails to cure the deficiencies discussed above regarding claim 4. Accordingly, Applicant submits that claim 11 is patentable at least by virtue of its dependency.

In addition, claim 11 recites that a size of pores in the moisture sensitive layer is from 0.05-0.2 μm . The Examiner recognizes that Sone fails to teach or suggest such a feature. In an attempt to cure this deficiency, the Examiner applies Tanino and asserts that Tanino discloses a moisture sensitive layer with pores having a size from 0.05-0.2 μm . Applicant respectfully disagrees.

Contrary to the assertion of the Examiner, Taniono does not disclose a moisture sensitive layer with pores having a size from 0.05-0.2 μm . Rather, Tanino discloses a filter film having a pore size of 0.01-3 μm , wherein the filter film is attached to a window of a case housing a humidity sensor element (see col. 3, lines 16-32).

Thus, while Tanino may arguably disclose a filter film having pores from 0.5-20 μm , Tanino clearly does not disclose a moisture sensitive layer with pores having a size from 0.05-0.2 μm , as is required by claim 11. Indeed, Tanino does not even remotely suggest such a feature.

Accordingly, as the combination of the Sone and Tanino fails to teach or suggest all of the features of claim 11, Applicant kindly requests that the Examiner reconsider and withdraw the rejection. If the Examiner persists in this rejection, Applicant respectfully requests that the Examiner particularly point out the passages in the cited art which teach the above discussed features.

E. Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sone (US 4,365,604) in view of Mobius et al. (US 3,377,203). Applicant respectfully traverses this rejection on the following basis.

Independent claims 12 and 13 recite the feature of a lower electrode, a moisture sensitive layer and an upper electrode successively formed on the insulating substrate. For the same reasons discussed above regarding claim 4, Applicant respectfully submits that Sone fails to teach or suggest such a feature. In addition, Applicant submits that Mobius fails to cure the

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deficiencies of Sone. Accordingly, Applicant respectfully requests that the rejection be reconsidered and withdrawn.

IV. Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,


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